Risk Planning

- Risk Tracking/Analysis used for
  - Focusing on elements of the project that may cause cost overruns or delays
  - Input to cost and schedule contingency estimates
- Risk & Maturity/Uncertainty
  - Maturity/Uncertainty: potential variance in estimated material or labor costs (possibly also schedule) due to state of design maturity
    - Estimated for each task in the RLS
  - Risk: an event that could have a positive or negative impact on the project cost or schedule
    - O(20) for entire project for analysis/presentation
      - + more for L2/L3 tracking
- Two Components of Contingency Estimate
  - Task-based: from rolling up maturity/uncertainty variances
  - Risk-based: from Primavera Risk Analysis MC using individual risks

Task-Based Contingency

- Estimating Maturity/Uncertainty for each Task in RLS
  - Based on ranking rule determined by state of estimate for that task
    - See attached document for an example from Phase-1
    - Each numerical rank ==> a specific uncertainty range
  - This ranking will be entered for each task when doing the resource loading using the Cost Estimate Tool (CET)
- Information to enter in CET
  - A numerical rank: 1-7 (material), 0-5 (labor) based on rules document
  - Possibly also a specific value from the range of uncertainties for that rule
    - By default this should be in the center of the range
- Project-wide Goal: 25-30% total task-based contingency
  - Some systems may need more, some less

Risk Analysis

- Risks compiled into a Risk Registry
  - Simple spreadsheet stored in the docDB
  - Each Risk can have impact on Cost, Schedule, & Technical Performance
  - Risks compiled for each L2 system and for project-wide items
- Uses of Risk Registry
  - Risk Tracking: two categories
    - Public Risks: presented in reviews, used in risk analysis
    - Private Risks: tracked only by L2 managers
      - These may be elevated to the Public category if necessary
  - Risk-based contingency: uses only “public” risks

Risk Analysis (2)

- MC estimate of Risk-based Contingency
  - Each risk is inserted into the RLS (by the Project Office) as a dummy task with zero cost and duration
  - This cost and duration are varied as part of the Primavera Risk Aanalysis (PRA) MC based on the Cost and Schedule Impact values in the Registry for that risk
  - Generate multiple trials with each risk either occurring or not based on its probability
    - For risks that occur cost and schedule impact values are chosen randomly from the range given and inserted into the risk task
  - The RLS is adjusted for each trial based on the new risk task cost/schedule values
  - 90% CL limits on Total Project Cost and End Date are derived.
- Note that this technique also gives an estimate of schedule float needed
  - Which can be compared to the actual float in the schedule

Gathering Risk Information

- Example of Risk Registry attached to agenda
  - L2/L3 managers should start populating this for their systems
    - The PO will also add some "global" risks
  - Aim for a few risks per deliverable
    - The PO will narrow this down to the most important for analysis
- Several types of Risk Registry Fields
  - Information entered by L2/L3 managers: everything not "grayed out"
    - Be consistent in formating here – this registry will be used by automated tools
  - Information added by PO: Risk ID
  - Calculated information: Probability, Impact, and Risk Scores
    - Uses the Risk Ranking matrix – see "Ranking" tab in Risk Registry example

L2/L3 Entered Risk Register Fields (1)

- WBS (at L3)
  - WBS to which this risk belongs (number & name)
- Risk Type
  - Threat or Opportunity
- Date Modified
- Title
  - short name for the risk
- Summary
  - more detailed description of risk
- Owner
  - L2 manager (or PM/DPM for global risks)

L2/L3 Entered Risk Register Fields (2)

- Probability that risk will occur
  - Pre-mitigation: if mitigation strategy is not implemented
  - Post-mitigation: after mitigation strategy is implemented
  - Note: mitigation happens before risk occurs, Response happens after
- Cost Impact: cost range in k$ to project if risk occurs
  - Low: smallest likely cost
  - High: highest likely cost
- Schedule Impact: schedule range in months if risk occurs
  - Low: smallest likely schedule change
  - High: highest likely schedule change
- Technical Impact: qualitative rank [0(N) – 3(H)] from the impact matrix
  - Indicates how the performance of the deliverable might be affected
  - Not used in estimating contingency

L2/L3 Entered Risk Register Fields (3)

- Risk Mitigation (for Threats)
  - Strategy to reduce the probability that this risk will happen
    - This strategy should be incorporated into the baseline plan
    - Cost/Schedule/Technical Impacts are quoted post-mitigation
  - Mitigation may reduce the cost/schedule impact of the risk instead of the probability
    - But this is less common
  - In the case of Opportunities: mitigation increases probability
- Risk Responses
  - What will happen of the risk occurs
- Comments
  - Any details that justify the estimated cost/schedule impacts